

## CLAIMS

- 1           1. An intermediate network device for use in a computer network carrying net-  
2       work traffic corresponding to sessions, the intermediate network device comprising:  
3           a traffic scheduler having one or more resources for use in forwarding network  
4       traffic received at the device at different rates;  
5           a classification engine configured to identify received network traffic based upon  
6       predefined criteria; and  
7           a resource reservation engine in communicating relationship with the traffic  
8       scheduler and the classification engine,  
9           wherein, in response to a request to reserve resources for a first session associated  
10      with a session group identifier (ID), the resource reservation engine determines whether  
11      the session group ID of the first session matches the session group ID of one or more  
12      second sessions for which resources have previously been reserved and, if so, directs the  
13      traffic scheduler to share the resources reserved for the one or more second sessions with  
14      the first session.
- 1           2. The intermediate network device of claim 1 wherein  
2           the resource reservation engine includes a data structure for storing information  
3       for the sessions, and  
4           the resource reservation engine stores a session group identifier (ID) for each ses-  
5       sion in the data structure.
- 1           3. The intermediate network device of claim 2 wherein the session group identi-  
2       fier associated with a given session includes a source address of an entity sourcing the  
3       traffic flow of the given session and a resource identifier (ID).
- 1           4. The intermediate network device of claim 3 wherein:  
2           the resource reservation engine utilizes the Resource reSerVation Protocol  
3       (RSVP) specification standard, and

4 the session group ID of a given session is contained in a RSVP Path message as-  
5 sociated with the given session.

1 5. The intermediate network device of claim 4 wherein the first and the one or  
2 more second sessions carry voice information.

1 6. The intermediate network device of claim 5 wherein the first and the one more  
2 second sessions originate from a single sourcing entity.

1 7. The intermediate network device of claim 1 wherein the first and the one or  
2 more or more second sessions originate from a single sourcing entity and are directed to  
3 two or more different destination entities.

1 8. The intermediate network device of claim 7 wherein the first and the one or  
2 more second sessions carry voice information and correspond to a call waiting context.

1 9. In a computer network having a plurality of entities interconnected by a plural-  
2 ity of intermediate network devices having one or more resources for use in forwarding  
3 network traffic corresponding to sessions, a method for sharing resources reserved for a  
4 first session with a second session, the method comprising the steps of:  
5 receiving a first resource reservation message associated with a first session, the  
6 first resource reservation message specifying a session group identifier (ID);  
7 storing the session group ID of the first resource reservation message;  
8 reserving resources for use with the first session;  
9 receiving a second resource reservation message associated with a second session,  
10 the second resource reservation message corresponding to a session group ID;  
11 comparing the session group ID associated with the second resource message with  
12 the stored session group ID specified by the first resource reservation message; and  
13 if the two session group IDs match, sharing the resources reserved for use with  
14 the first session with the second session.

1           10. The method of claim 9 wherein the session group identifier associated with a  
2           given session includes a source address of an entity sourcing the traffic flow and a re-  
3           source identifier (ID).

1           11. The method of claim 10 wherein the first resource reservation messages is a  
2           Path message in accordance with the Resource reSerVation Protocol (RSVP) specifica-  
3           tion standard that has been configured to carry the resource ID.

1           12. The method of claim 11 wherein the second resource reservation message is a  
2           RSVP Resv message corresponding to the second session.

1           13. The method of claim 11 wherein the resource ID is disposed in a resource ID  
2           object of the RSVP Path message.

1           14. In a sourcing entity interconnected with two or more receiving entities by a  
2           computer network having a plurality of intermediate network devices, the devices having  
3           one or more resources for use in forwarding network traffic corresponding to sessions, a  
4           method for sharing resources reserved for a first session with a second session, the  
5           method comprising the steps of:

6                 generating a first resource reservation message associated with the first session;  
7                 loading the first resource reservation message with a session group identifier (ID);  
8                 sending the first resource reservation message with the session group ID toward a  
9           first receiving entity;

10                generating a second resource reservation message associated with the second ses-  
11           sion;

12                loading the first resource reservation message with the session group identifier  
13           used in the first resource reservation message; and

14                sending the second resource reservation message with the session group ID to-  
15           ward a second receiving entity,

16                whereby resources reserved for use with the first session are shared with the sec-  
17           ond session.

1           15. The method of claim 14 further comprising the steps of:  
2           generating a locally unique resource identifier (ID) value; and  
3           generating the session group ID based on the resource ID value.

1           16. The method of claim 15 wherein the session group ID includes a source ad-  
2           dress of the sourcing entity and the resource ID.

1           17. The method of claim 14 wherein the first and second resource reservation  
2           messages are Path message in accordance with the Resource reSerVation Protocol  
3           (RSVP) specification standard that have been configured to carry the resource ID.

1           18. The method of claim 17 wherein the first and second sessions carry voice in-  
2           formation and correspond to a call waiting context.